Title: Reducing Chemical Dependence Through Biological Control: A Randomized Controlled Trial of Nature-Based Solutions

Abstract: Farmers use growing amounts of insecticides to overcome the rising resistance in crop pests. Once crop pests develop resistance to commonly used insecticides, the benefits from increasing applications are small, while potential detrimental effects to the environment and public health are large. We find that rice farmers in China can reduce their insecticide use by 19% when adopting a natural enemy—a parasitic wasp—without experiencing a reduction in yield or revenue. These findings suggest that nature-based solutions, in the form of reintroducing natural enemies to agro-ecological settings, can reduce insecticide use.